
Scalable, Defined Production of Oligodendrocyte Precursor Cells to Treat Neural Disease and Injury

Grant Award Details

Scalable, Defined Production of Oligodendrocyte Precursor Cells to Treat Neural Disease and Injury

Grant Type: Quest - Discovery Stage Research Projects

Grant Number: DISC2-08982

Project Objective: Develop optimized, defined, scalable 3D process for hESC-derived OPC

Investigator:

Name:	David Schaffer
Institution:	University of California, Berkeley
Type:	PI

Disease Focus: Neurological Disorders, Spinal Cord Injury

Human Stem Cell Use: Embryonic Stem Cell, iPS Cell

Award Value: \$1,634,055

Status: Active

Grant Application Details

Application Title: Scalable, Defined Production of Oligodendrocyte Precursor Cells to Treat Neural Disease and Injury

Public Abstract:**Research Objective**

The goal of this proposal is to develop an optimized, scalable process to manufacture high quality oligodendrocyte precursor cells (OPCs) from human pluripotent stem cells for treating human disease.

Impact

OPCs have therapeutic potential for spinal cord injury, restoration of cognitive function after cancer radiation therapy, inherited demyelinating disease, and potentially multiple sclerosis.

Major Proposed Activities

- To engineer human embryonic stem cell lines with fluorescent protein reporters to quantify differentiation into oligodendrocyte precursor cells (OPCs).
- To use a high throughput system to screen thousands of cell culture conditions and thereby optimize a chemically-defined three-dimensional culture for differentiation into OPCs.
- To validate the capacity of the differentiated oligodendrocyte precursor cells to remyelinate neurons in culture and in the nervous system.
- To scale up this cell manufacturing system in a bioreactor for future translation towards preclinical and clinical studies.

Statement of Benefit to California:

This proposal will accelerate the development of a stem cell therapy to treat patients with demyelinating conditions, a serious unmet medical need. Also, the PI has a strong record of translating research towards clinical development within industry, particularly within California. Finally, this project will expose young scientists within a large stem cell center to highly interdisciplinary training at the interface of science and engineering, thereby enhancing our California workforce.

Source URL: <https://www.cirm.ca.gov/our-progress/awards/scalable-defined-production%C2%A0-oligodendrocyte-precursor-cells-treat-neural>